



DEPARTMENT OF  
HIGHER EDUCATION &  
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# 2018-2028

## MISSOURI MIDDLE-SKILL

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# JOBS REPORT





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# MIDDLE-SKILLS OVERVIEW

Middle-skill occupations are an essential part of Missouri's workforce, accounting for four out of every 10 jobs. **These critical occupations are broadly defined as occupations that require some training after high school but less than a bachelor's degree.** Low-skill jobs are those that only require a high school education, while high-skill jobs require at least a bachelor's degree.

Meeting the continued demand for middle-skill occupations will be an important factor in maintaining a strong economy in the state. Middle-skill jobs can also offer good pay or career opportunities with industry-recognized training and credential programs that can be as short as a few months. Given that seven out of 10 Missourians, and Americans, do not have a bachelor's degree, middle-skill jobs offer an important opportunity for better pay and advancement. This report highlights Missouri's middle-skill jobs and provides details on several occupational groups where middle-skilled talents are in high demand.

MIDDLE-SKILL OCCUPATIONS ACCOUNT FOR  
FOUR OUT OF EVERY 10 JOBS IN MISSOURI.



# MISSOURI'S MIDDLE-SKILL OCCUPATIONS

Middle-skill occupations have an average annual wage of \$43,029. This is lower than the average annual wage of \$46,460 for all occupations in the state, but greater than the average annual wage of \$27,639 for low-skill occupations.

A large number of jobs in Missouri's labor market are middle-skill occupations. In 2018, 40 percent of the workforce was employed in middle-skill occupations, compared to 35 percent employed in low-skill occupations and 25 percent employed in high-skill occupations.

The middle-skill occupation with the highest individual employment is *Secretaries and Administrative Assistants*, followed by *Heavy and Tractor-Trailer Truck Drivers* and *Nursing Assistants*. These three occupations combined employed more than 162,000 workers in Missouri in 2018.

Middle-skill occupations are projected to produce over 137,000 annual job openings during the projection period of 2018 to 2028. This represents 37 percent of all job openings during the period, while high-skill occupations are projected to produce 18 percent of all job openings and low-skill occupations are projected to produce 45 percent of all job openings.

Total job openings are a combination of growth, exit, and transfer openings:

- Growth openings are the result of an occupation growing between the base year and the projected year.
- Exit openings occur when a worker leaves the workforce entirely, such as retirement.
- Transfer openings occur when a worker leaves their occupation for a different one.

Four occupation groups have particularly high concentrations of middle-skill employment:

- Installation, Maintenance, and Repair
- Production
- Health Care Support
- Construction and Extraction

## MIDDLE-SKILL JOBS



**1,234,669**  
EMPLOYMENT



**137,679**  
ANNUAL JOB  
OPENINGS 2018-2028



**\$43,029**  
AVERAGE WAGE



**40%**  
OF MISSOURI JOBS  
ARE MIDDLE-SKILL

# MISSOURI'S MIDDLE-SKILL OCCUPATIONS BY INDUSTRY

Overall, middle-skill occupations make up 40 percent of total employment in Missouri. Some industries, however, have a much higher percentage of middle-skill employment. The *Mining* industry has the highest percentage of middle-skill employment, followed by the *Manufacturing* and *Construction* industries.

## Middle-Skill Employment Percent of Industry 2018



The *Manufacturing* industry has the highest total number of middle-skill employees, followed by the *Health Care and Social Assistance* sector. While *Construction* is the 11<sup>th</sup> largest industry overall, it is the fourth largest in terms of middle-skill employment.

## TOTAL MIDDLE-SKILL EMPLOYMENT BY INDUSTRY



182,457

MANUFACTURING



165,178

HEALTH CARE



109,301

GOVERNMENT



82,905

CONSTRUCTION



78,519

RETAIL TRADE

# TOP MIDDLE-SKILL JOBS BY OPENINGS, GROWTH, & WAGES

The middle-skill occupations with the most total job openings during the projection period are *Secretaries and Administrative Assistants*, *Heavy and Tractor-Trailer Truck Drivers*, and *Nursing Assistants*. These three occupations combined are projected to have over 18,000 job openings per year through 2028. Even though *Secretaries and Administrative Assistants* are projected to experience negative growth by 2028, there is still a need to replace workers that retire or otherwise leave the occupation.

## Top Middle-Skill Occupations by Annual Openings 2018-2028

Occupations	2018 Estimated Employment	2028 Projected Employment	Annual Openings Growth	Total	2018 Average Wage
Secretaries and Administrative Assistants 🔥	73,127	65,973	-715	<b>7,069</b>	\$35,010
Heavy and Tractor-Trailer Truck Drivers 🔥	48,473	50,761	229	<b>5,871</b>	\$45,070
Nursing Assistants 🔥	41,022	44,732	371	<b>5,176</b>	\$25,930
Cooks, Restaurant	28,891	34,150	526	<b>4,985</b>	\$25,180
Bookkeeping, Accounting, and Auditing Clerks	32,648	31,141	-151	<b>3,565</b>	\$38,340
Supervisors of Food Preparation and Serving Workers	18,988	20,518	153	<b>3,169</b>	\$34,010
Maintenance and Repair Workers, General 🔥	28,916	30,178	126	<b>2,990</b>	\$38,200
Sales Representatives, Wholesale and Manufacturing 🔥	25,941	27,203	126	<b>2,913</b>	\$65,640
First-Line Supervisors of Retail Sales Workers 🔥	27,159	26,398	-76	<b>2,869</b>	\$43,400
Sales Representatives, Services, All Other	19,094	20,278	118	<b>2,611</b>	\$54,920

🔥 Flame icon indicates occupations with high numbers of online job ad postings in 2020.

The middle-skill occupations that are projected to experience the fastest rates of growth are *Respiratory Therapists*, *Occupational Therapy Assistants*, and *Physical Therapist Assistants*. These three occupations have projected growth rates over 24 percent, compared to 4.5 percent growth for all occupations in Missouri. Of the top 10 middle-skill occupations with the highest growth rates, eight are in the health care field.

## Middle-Skill Fastest Growing Occupations 2018-2028

Occupations	2018 Estimated Employment	2028 Projected Employment	2018-2028 Net Change	Percent Change	2018 Average Wage
Respiratory Therapists	3,354	4,308	954	<b>28.4%</b>	\$56,320
Occupational Therapy Assistants	777	988	211	<b>27.2%</b>	\$57,310
Physical Therapist Assistants	2,304	2,861	557	<b>24.2%</b>	\$53,150
Diagnostic Medical Sonographers	1,244	1,534	290	<b>23.3%</b>	\$73,920
Phlebotomists	2,738	3,370	632	<b>23.1%</b>	\$31,320
CNC Machine Tool Programmers, Metal and Plastic	616	745	129	<b>20.9%</b>	\$55,050
Massage Therapists	2,116	2,541	425	<b>20.1%</b>	\$37,100
Medical Assistants	10,561	12,649	2,088	<b>19.8%</b>	\$32,260
Cooks, Restaurant	28,891	34,150	5,259	<b>18.2%</b>	\$25,180
Health Technologists and Technicians, All Other	2,278	2,674	396	<b>17.4%</b>	\$46,580

Occupations with net growth of less than 50 are omitted

While the average annual wage for all middle-skill occupations is \$43,029, some middle-skill occupations earn considerably more. The middle-skill occupation with the highest average annual wage is *Air Traffic Controllers*; followed by *Transportation, Storage, and Distribution Managers*; and *Commercial Pilots*. Although these occupations have higher than average wages, they make up a smaller portion of Missouri's total and projected employment.

Top Middle-Skill Occupations by Average Wage

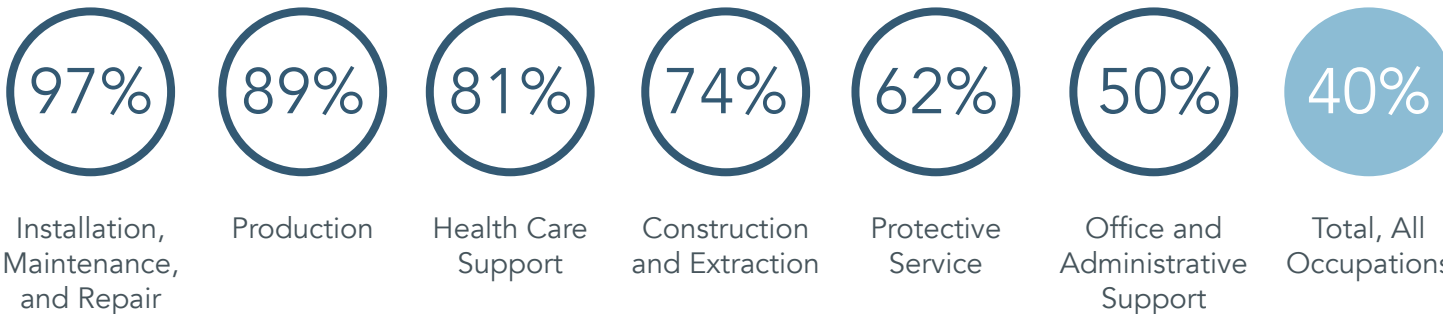
Occupations	2018 Estimated Employment	2028 Projected Employment	Annual Openings Growth	Total	2018 Average Wage
Air Traffic Controllers	259	266	1	25	\$101,280
Transportation, Storage, and Distribution Managers	2,245	2,395	15	197	\$98,730
Commercial Pilots	520	537	2	56	\$93,420
Insurance Appraisers, Auto Damage	236	247	1	22	\$91,720
Power Distributors and Dispatchers	145	140	0	13	\$86,320
First-Line Supervisors of Non-Retail Sales Workers	6,957	6,871	-9	652	\$79,510
First-Line Supervisors of Police and Detectives	2,229	2,275	5	144	\$78,750
Power Plant Operators	918	878	-4	80	\$76,320
Electrical and Electronics Repairers, Powerhouse, etc.	290	297	1	26	\$76,300
Nuclear Medicine Technologists	475	532	6	33	\$75,680

Occupations with less than 10 total annual openings are omitted

MIDDLE-SKILL EMPLOYMENT BY MAJOR OCCUPATION GROUP

Occupations can be clustered into 23 major groups. While all major occupation groups have middle-skill jobs, some have higher percentages of middle-skill employment than others. The *Installation, Maintenance, and Repair* occupation group has the highest percentage of middle-skill employment, followed by *Production*. Six major occupation groups have middle-skill employment percentages that are higher than the state average of 40 percent. Some occupation groups with above average middle-skill employment percentages such as *Health Care Support* or *Production* are heavily concentrated in certain industries, such as the *Health Care* or *Manufacturing* industries, respectively. There are exceptions to this, such as *Installation, Maintenance, and Repair* or *Office and Administrative Support* occupations, which are more evenly distributed among a variety of industries.

Occupation Groups With Above Average Percent of Middle-Skill Jobs





# INSTALLATION, MAINTENANCE, AND REPAIR OCCUPATIONS

The *Installation, Maintenance, and Repair* major occupation group has 97 percent of its employment in middle-skill occupations. The top three occupations with the most projected total openings in this group are *General Maintenance and Repair Workers*; *Automotive Service Technicians and Mechanics*; and *Heating, Air Conditioning, and Refrigeration Mechanics and Installers*. These three occupations combined are projected to have over 5,600 total job openings each year through 2028.

## Top Middle-Skill Installation, Maintenance, and Repair Occupations by Total Openings

Occupations	2018 Estimated Employment	2028 Projected Employment	Annual Openings Growth	Total	2018 Average Wage
Maintenance and Repair Workers, General	28,916	30,178	126	<b>2,990</b>	\$38,200
Automotive Service Technicians and Mechanics	19,440	19,079	-36	<b>1,839</b>	\$43,080
Heating, AC, and Refrigeration Mechanics and Installers	7,221	8,033	81	<b>826</b>	\$47,710
First-Line Supervisors of Mechanics, Installers, and Repairers	8,108	8,315	21	<b>774</b>	\$62,440
Bus and Truck Mechanics and Diesel Engine Specialists	6,278	6,643	36	<b>634</b>	\$45,320
Industrial Machinery Mechanics	5,104	5,482	38	<b>523</b>	\$54,030
Telecommunications Equipment Installers and Repairers	4,450	3,934	-52	<b>410</b>	\$51,760
Mobile Heavy Equipment Mechanics, Except Engines	3,755	3,978	22	<b>407</b>	\$50,610
Automotive Body and Related Repairers	3,366	3,467	10	<b>338</b>	\$47,640
Telecommunications Line Installers and Repairers	2,874	2,820	-5	<b>312</b>	\$50,950

*Installation, Maintenance and Repair* occupations are found in many industries, with 14 percent of employment being found in the *Retail Trade* industry. The relatively even distribution of employment across industries of this major occupational group shows that *Installation, Maintenance, and Repair* occupations are in demand in a wide range of organizations.

Many of the technology skills that are important for *Installation, Maintenance, and Repair* occupations are considered “hot technology” according to the Employment and Training Administration’s O\*NET, meaning that they are technology skills that are frequently included in employer job postings. For example, being skilled in enterprise resource planning (ERP) software is important for seven of the top 10 middle-skill *Installation, Maintenance, and Repair* occupations with the most annual openings.

Certifications can be useful when pursuing an *Installation, Maintenance and Repair* occupation. Some certifications, such as an Automotive Service Excellence Certification, are more specialized to a narrow range of jobs, while other certifications, such as a commercial driver’s license, could be applicable to a variety of jobs.

### Top Skills

Baseline	Specialized
Preventive Maintenance	Repair
Physical Abilities	HVAC
Communication Skills	Plumbing
Troubleshooting	Customer Service
Computer Literacy	Predictive Maintenance

*Labor Insight Burning Glass 01 JUN 2019 - 31 MAY 2021*

### Top Certifications

Driver’s License
Automotive Service Excellence Certification
Environmental Protection Agency Certification
Commercial Driver’s License
EPA CFC/HCFC Certification

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# MAJOR OCCUPATION GROUP

# PRODUCTION OCCUPATIONS

Nine out of 10 *Production* jobs are middle-skilled. The top three middle-skill *Production* occupations with the most projected total openings are *Assemblers and Fabricators, Including Team Assemblers; First-Line Supervisors of Production and Operating Workers; and Welders, Cutters, Solderers, and Brazers*. These three occupations combined are projected to have more than 5,000 total openings in Missouri each year through 2028.

## Top Middle-Skill Production Occupations by Total Openings

Occupations	2018	2028	Annual Openings		2018
	Estimated Employment	Projected Employment	Growth	Total	Average Wage
Assemblers and Fabricators, Including Team Assemblers	25,690	21,911	-378	<b>2,394</b>	\$37,350
First-Line Supervisors of Production and Operating Workers	13,703	13,817	11	<b>1,417</b>	\$58,630
Welders, Cutters, Solderers, and Brazers	11,050	11,187	14	<b>1,233</b>	\$40,580
Packaging and Filling Machine Operators and Tenders	9,503	9,681	18	<b>1,132</b>	\$35,660
Inspectors, Testers, Sorters, Samplers, and Weighers	10,107	8,368	-174	<b>964</b>	\$42,860
Electrical, Electronic, and Electromechanical Assemblers	7,425	7,715	29	<b>889</b>	\$32,310
Production Workers, All Other	6,924	7,249	32	<b>852</b>	\$31,610
Machinists	6,453	6,565	11	<b>672</b>	\$46,130
Food Batchmakers	4,445	4,410	-4	<b>652</b>	\$34,680
Multiple Machine Tool Setters, Operators, and Tenders	5,038	5,094	6	<b>536</b>	\$34,620

Seventy-one percent of *Production* jobs are found in the *Manufacturing* industry. This strong link between the *Manufacturing* sector and *Production* occupations is evident in the fact that knowledge of production and processing is important for all of the top 10 middle-skill *Production* occupations.

Computer aided design (CAD) software and/or enterprise resource planning (ERP) software are important technology skills for eight of the top 10 middle-skill *Production* occupations. These are also considered “hot technology” skills, according to O\*NET. As manufacturing becomes more technologically advanced it is important for production workers to continue to learn the skills necessary to keep up in a changing manufacturing environment.

In addition to these more specialized technology skills, basic computer skills are also becoming increasingly necessary across a range of occupations, with skills in office suite software (such as Microsoft Office), being important for the top 10 middle-skill *Production* occupations. With spreadsheet software (such as Microsoft Excel) being important for nine of the top 10 *Production* occupations, it is clear that acquiring basic computer skills is becoming necessary to remain competitive in a wide range of occupations, not just office jobs.

## Top Skills

Baseline	Specialized
Physical Abilities	Packaging
Communication Skills	Cleaning
Detail-Oriented	Repair
Work Area Maintenance	Machine Operation
Teamwork/Collaboration	Machinery

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## Top Certifications

Driver's License
OSHA Forklift Certification
Commercial Driver's License
Welding Certification
ServSafe

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# MAJOR OCCUPATION GROUP

# HEALTH CARE SUPPORT

Eight out of 10 *Health Care Support* jobs are middle-skilled. The top three middle-skill *Health Care Support* occupations with the most total openings are *Nursing Assistants*, *Medical Assistants*, and *Dental Assistants*. These three occupations combined are projected to have more than 7,300 annual job openings through 2028.

## Top Middle-Skill Health Care Support Occupations by Total Openings

Occupations	2018 Estimated Employment	2028 Projected Employment	Annual Openings Growth Total		2018 Average Wage
Nursing Assistants	41,022	44,732	371	<b>5,176</b>	\$25,930
Medical Assistants	10,561	12,649	209	<b>1,487</b>	\$32,260
Dental Assistants	5,354	5,942	59	<b>691</b>	\$38,350
Veterinary Assistants and Laboratory Animal Caretakers	2,347	2,677	33	<b>438</b>	\$28,110
Phlebotomists	2,738	3,370	63	<b>386</b>	\$31,320
Physical Therapist Assistants	2,304	2,861	56	<b>376</b>	\$53,150
Massage Therapists	2,116	2,541	42	<b>314</b>	\$37,100
Medical Transcriptionists	1,694	1,623	-7	<b>224</b>	\$34,910
Medical Equipment Preparers	1,574	1,743	17	<b>206</b>	\$32,320
Occupational Therapy Assistants	777	988	21	<b>116</b>	\$57,310

*Health Care Support* middle-skill occupations can often lead to high-paying and high-skill job opportunities in the Health Care field. For example, *Nursing Assistants* could combine the skills and experiences gained in the occupation with further education, which could lead to employment as *Registered Nurses*.

Eighty-two percent of *Health Care Support* occupations are found in the *Health Care and Social Assistance* industry. Some of the skills and knowledge that are typically required of *Health Care Support* occupations can be found in other occupations across a wide range of industries. For example, the ability to provide customer and personal service is important for nine of the top 10 middle-skill *Health Care Support* occupations with the most total openings, but it is also important for many other occupations, especially those that require direct contact with customers.

Certifications can be of great importance when pursuing a *Health Care Support* occupation. In fact, 63 percent of online job postings for middle-skill *Health Care Support* occupations between June 2019 and May 2021 mentioned certifications. Many of these certifications directly correspond to a particular occupation, such as Certified Nursing Assistant, and Certified Medical Assistant. Some certifications, such as First Aid CPR AED, may be valuable across a wide range of health care occupations.

## Top Skills

Baseline	Specialized
Communication Skills	Patient Care
Physical Abilities	Vital Signs Measurement
Teamwork/Collaboration	Phlebotomy
Organizational Skills	Scheduling
Telephone Skills	CPR

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## Top Certifications

Certified Nursing Assistant
Certified Medical Assistant
First Aid CPR AED
Basic Life Saving (BLS)
Basic Cardiac Life Support Certification

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# MAJOR OCCUPATION GROUP

## CONSTRUCTION OCCUPATIONS

Three out of four *Construction and Extraction* jobs are middle-skilled. The top three middle-skill *Construction* occupations with the most total openings are *Carpenters*; *Electricians*; and *Operating Engineers and Other Construction Equipment Operators*. These three occupations combined are projected to have over 4,600 annual job openings through 2028.

### Top Middle-Skill Construction Occupations by Total Openings

Occupations	2018 Estimated Employment	2028 Projected Employment	Annual Openings		2018 Average Wage
			Growth	Total	
Carpenters	19,356	20,278	92	<b>2,143</b>	\$55,220
Electricians	12,142	13,051	91	<b>1,551</b>	\$60,860
Operating Engineers & Other Const. Equipment Operators	7,438	7,890	45	<b>929</b>	\$53,990
Plumbers, Pipefitters, and Steamfitters	7,199	7,976	78	<b>920</b>	\$63,550
Supervisors of Construction Trades and Extraction Workers	7,728	8,209	48	<b>876</b>	\$69,670
Painters, Construction and Maintenance	6,672	6,925	25	<b>713</b>	\$51,730
Highway Maintenance Workers	6,135	6,248	11	<b>698</b>	\$35,520
Cement Masons and Concrete Finishers	4,529	4,834	30	<b>521</b>	\$55,270
Sheet Metal Workers	4,014	4,262	25	<b>473</b>	\$61,840
Roofers	2,654	2,974	32	<b>322</b>	\$52,150

Building and construction knowledge is important for nine of the top 10 middle-skill *Construction* occupations with the most total openings. However, other knowledge requirements are less obvious, such as customer and personal service skills, or administration and management knowledge, both of which are important for seven of the top 10 middle-skill *Construction* occupations. As many construction workers are self-employed, these skills can be a great advantage in the marketplace.

Many occupations that typically require apprenticeship programs are *Construction* occupations. Of the top 10 middle-skill *Construction* occupations with the most total openings, four typically require Registered Apprenticeship programs. Apprenticeships offer employees the opportunity to earn money and receive on-the-job training while working toward a nationally recognized credential.

### Apprenticeship Occupations

Occupations	Average Wage	Annual Openings
Carpenters	\$55,220	2,143
Electricians	\$60,860	1,551
Plumbers, Pipefitters, and Steamfitters	\$63,550	920
Sheet Metal Workers	\$61,840	473
Brickmasons and Blockmasons	\$64,900	224
Structural Iron and Steel Workers	\$55,770	221
Glaziers	\$53,230	109
Insulation Workers, Mechanical	\$61,120	64
Elevator Installers and Repairers	\$70,400	62
Millwrights	\$55,210	45
Boilermakers	\$51,420	37
Stonemasons	\$43,150	36
Musical Instrument Repair and Tuners	\$35,990	31
Reinforcing Iron and Rebar Workers	\$70,660	n/a
Terrazzo Workers and Finishers	n/a	n/a

### Top Skills

Baseline	Specialized
Physical Abilities	Repair
Communication Skills	Hand Tools
Detail-Oriented	Carpentry
Troubleshooting	Painting
Teamwork/Collaboration	Occ. Health and Safety



# MIDDLE-SKILLS CONCLUSION

Missouri's middle-skill occupations play a very important part in the economy and are projected to continue to make up a large portion of the workforce through 2028. Middle-skill jobs that typically require one year or less of training can be good entry points for workers into middle-skill occupations. For jobs that require more training or education, Missouri's community colleges and apprenticeship programs serve a vital role in educating and training the workforce to meet the demands of these occupations.

The military can also be a pathway to a middle-skill job. Not every military occupation will translate to a civilian job, but many do. Out of 802 civilian occupations, 272 are directly related to an enlisted military occupation. Of those 272 occupations, 171 (63%) are middle-skill, and another 63 (23%) are high-skill occupations. Typically, enlisted military occupations do not require any education or work experience other than a high school diploma. However, enlisted service members receive technical training and on-the-job training, specific to their particular job, from the military. Depending on the service branch and the occupation, this technical training can be combined with voluntary off-duty courses to earn an associate degree<sup>i</sup>.

Several studies have shown that as older workers retire, demand for replacement workers in middle-skill occupations will remain high, and that younger workers may lack the skills necessary to fill those positions.<sup>ii</sup> Further studies have shown that countries that have improved employment opportunities for middle-skill workers share a set of common policies, such as an emphasis on vocational education and apprenticeships<sup>iii</sup>. Preparing the workforce with the skills necessary to fill middle-skill replacement openings will be a continuing need to ensure a healthy state economy.

MIDDLE-SKILL JOBS THAT TYPICALLY REQUIRE ONE YEAR OR LESS OF TRAINING CAN BE GOOD ENTRY POINTS INTO MIDDLE-SKILL OCCUPATIONS.



# DEFINING MIDDLE-SKILL OCCUPATIONS

Middle-skill jobs are typically defined as jobs that require some training after high school but less than a bachelor's degree. This definition is straightforward in concept yet more difficult in practice as research organizations differ in the methodologies they use. Some use educational or experience requirements from the U.S. Department of Labor or U.S. Census surveys, while others use wages as an indicator.

For example, in a study by the Organization for Economic Co-operation and Development (OECD), wages were used to define middle-skill occupations.<sup>iv</sup> This approach has merit, as often middle-skilled jobs are associated with middle-wage opportunities. The difficulty with using wages at a detailed occupational level, however, is that some lower paid jobs can typically require higher training levels. Counselors and other governmental workers, for example, often need bachelor's degrees but receive lower pay which would categorize the job as middle-skilled using that methodology.

A research paper published by the Federal Reserve Bank of Boston<sup>v</sup> used the actual educational attainment of job holders based on the American Community Survey (ACS), rather than using the minimum education level needed for entry into an occupation. Occupations were defined as "high-skill" if at least a plurality (40 percent) of individuals employed in that line of work had completed at least a four-year college degree, while occupations were defined as "low-skill" if at least 40 percent of its workers had no more than a high school education. Occupations in which fewer than 40 percent of employees had a four-year degree and fewer than 40 percent had only a high school education or less were defined as "middle-skill". This method has the advantage of taking into consideration the competitive education environment workers face when applying for jobs. While a certain occupation may only require a high school diploma as a minimum, if a large portion of workers have some college training then a high school applicant is at a competitive disadvantage when applying for those jobs.

The downside of this method is that even though an occupation may have over 60 percent of its workers with educational attainment beyond high school, it is unclear whether the skills and education beyond high school were required for that particular job. Using this criteria, for example, finds jobs such as *Retail Salespersons* falling into the middle-skill category although all other data point to this as a job requiring only entry-level skills.

Middle-skill research from several Federal Reserve Banks (FRB) in 2015<sup>vi</sup> and 2019<sup>vii</sup> focused on the nation's largest metropolitan areas and defined "opportunity occupations" as ones considered accessible to someone without a bachelor's degree but that pay at least the national median wage when adjusted for local prices. In addition to wages from the Bureau of Labor Statistics (BLS) Occupational Employment and Wage Statistics program (OEWS), this study took into account average weekly hours worked from the American Community Survey (ACS), Regional Price Parity data from the Bureau of Economic Analysis (BEA), and Burning Glass online job ad information to identify middle-skilled occupations, placing the average at 22 percent of employment.

Jobs for the Future (JFF) and the Lumina Foundation defined middle-skill occupations as those that pay at least \$15 an hour and required skills typically attained through some education beyond high school but not a four-year college degree.<sup>viii</sup> Using Burning Glass resume data spanning the last 20 years and BLS OEWS wage data, the report further divided middle-skill occupations into "lifetime jobs", "springboard jobs", and "static jobs" based on average wage and career advancement potential of occupations. This report is innovative in its use of resume data to determine outcomes of employment in occupations and not just viewing entry into an occupation as an "end-point". The report only examined middle-skill occupations within seven major occupational groups. While it provides a very in-depth analysis of a large number of middle-skill occupations, it is not a comprehensive analysis of all middle-skill occupations.

There are multiple, reasonable ways to define middle-skill jobs that all have advantages and drawbacks. Despite these differences, and the complexities that location or upskilling bring, most research points to the same groupings of occupations (*construction, maintenance and repair, production, and health care*) that vary in demand but offer opportunities for good paying careers that are critical to the economy. This is especially true for middle-skill jobs that rely on advanced technical training in fields such as health care, computer systems, construction trades, or machinery. The broader truth is that these different approaches show that the educational bar for jobs continues to rise and that "middle-skill" talents will need to evolve with this trend.

# METHODOLOGY

There is no standard definition of middle-skill occupations. A common description is jobs that are accessible to a person with some training after high school, but require less than a bachelor's degree. However, as described in the previous section, there are numerous methodologies and sources of data that organizations use to classify middle-skill occupations. These complexities result in a wide range of figures surrounding middle-skilled jobs, with recent research showing estimates from 22 to 52 percent of the nation's employment falling into this category<sup>ix</sup>.

The methodology used by the Missouri Economic Research and Information Center (MERIC) combines the Bureau of Labor Statistics (BLS) typical requirement categories for entry into an occupation, with the Employment and Training Administration's O\*NET Job Zone classifications, to separate jobs into either low, middle, or high-skill occupations.

The primary source for assigning occupational skill levels is the BLS typical education, experience and training requirement definitions.<sup>x</sup> BLS classifies each occupation based on the typical education required to enter an occupation, the work experience in a related job required to enter into an occupation, and the typical on-the-job training required to attain competency in the skills needed in an occupation.

The second source used by MERIC for assigning skill levels is the O\*NET Job Zones.<sup>xi</sup> The Job Zones indicate the level of vocational preparation needed for a particular occupation. Job Zones are classified on a 1-5 scale, with Job Zone 1 needing little or no preparation for entry into an occupation, and Job Zone 5 needing extensive preparation for entry into an occupation.

High-skill occupations are defined solely as having a BLS typical education classification of a bachelor's degree or higher. Low-skill occupations must have a BLS typical education classification of high school or less; no experience necessary; job training typically less than one-month (short-term); and an O\*NET Job Zone of 2 or less.

Once high-skill and low-skill occupations are categorized, all remaining jobs are defined as middle-skill. Most middle-skill occupations require on-the-job training of a year or more, including apprenticeships, and have Job Zones of 2 or 3. A Job Zone of 3 indicates that an occupation needs medium preparation. Middle-skill occupations at the higher end of the category require postsecondary education such as an associate degree and/or some work experience in a related occupation.

This same methodology is also used by MERIC to define Now, Next, and Later occupations. Now, Next, and Later designations are used to quickly identify the general amount of time it would take to acquire the skills and education that would typically be necessary for entry into a particular occupation. Next occupations correspond to middle-skill occupations, while Now and Later occupations correspond to low-skill and high-skill occupations respectively.



# MISSOURI MIDDLE-SKILLS REPORT

# DATA SOURCES

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U.S. Census Bureau, American Community Survey for educational attainment of Missouri and United States population 25 years old and over.

U.S. Bureau of Labor Statistics (BLS) Employment Projections program for education, experience, and job training requirements.

BLS Occupational Employment and Wage Statistics (OEWS) program for estimated base year employment and wages.

Employment and Training Administration's O\*NET Job Zones used to define skill levels of occupations.

O\*NET occupation summaries used to describe skills and knowledge of occupations.

Missouri Economic Research and Information Center (MERIC) 2018-2028 occupational and industry employment projections data used for projected employment and openings, and middle-skill concentration of industry and occupation groups.

Burning Glass Labor Insight was used to describe the top skills, certifications, and employers of occupations and to identify occupations with high numbers of job postings in 2020.

Middle-Skill employment in major occupation groups was based on publishable employment projections data.

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<sup>i</sup> The U.S. Air Force offers opportunities to earn Associate of Applied Science degrees through the Community College of the Air Force. <https://www.airuniversity.af.edu/Barnes/CCAF/>

<sup>ii</sup> Kirsch, I., Sands, A., Robbins, S., Goodman, M., Tannenbaum, R. (2021) "Buttressing the Middle: A Case for Reskilling and Upskilling America's Middle-Skill Workers in the 21st Century". Princeton, NJ: Educational Testing Service. Retrieved 08 June 2021 from <https://static1.squarespace.com/static/51bb74b8e4b0139570ddf020/t/608b19015846304b273e9ebc/1619728643584/Buttressing-policy-report.pdf>

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<sup>iii</sup> OECD (2020). "Smooth transitions but in a changing market: The prospects of vocational education and training graduates". OECD Employment Outlook 2020: Worker Security and the COVID-19 Crisis. OECD Publishing, Paris. Retrieved 02 June 2021 from [https://www.oecd-ilibrary.org/employment/oecd-employment-outlook-2020\\_7393e48f-en](https://www.oecd-ilibrary.org/employment/oecd-employment-outlook-2020_7393e48f-en)

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<sup>iv</sup> OECD (2020). "What is happening to middle-skill workers?". OECD Employment Outlook 2020: Worker Security and the COVID-19 Crisis. OECD Publishing, Paris. Retrieved 02 June 2021 from <https://doi.org/10.1787/c9d28c24-en>

<sup>v</sup> Burke, M., Modestino, A., Sadighi, S., Sederberg, R., Taska, B. (2020). "No Longer Qualified? Changes in the Supply and Demand for Skills within Occupations". Federal Reserve Bank of Boston Research Department Working Papers No 20-3. Retrieved 16 June 2021 from <https://www.bostonfed.org/publications/research-department-working-paper/2020/no-longer-qualified-changes-in-the-supply-and-demand-for-skills-within-occupations.aspx>

<sup>vi</sup> Wardrip, K., Fee, K., Nelson, L., Andreason, S. (September 2015). "Identifying Opportunity Occupations in the Nation's Largest Metropolitan Economies". The Federal Reserve Banks of Philadelphia, Cleveland, and Atlanta. Retrieved 03 June 2021 from <https://www.clevelandfed.org/newsroom-and-events/publications/special-reports/sr-20150909-identifying-opportunity-occupations.aspx>

<sup>vii</sup> Fee, K., Wardrip, K., Nelson, L. (April 2019). "Opportunity Occupations Revisited". The Federal Reserve Banks of Philadelphia and Cleveland. Retrieved 03 June 2021 from <https://www.philadelphiafed.org/-/media/frbp/assets/community-development/reports/opportunity-occupations-revisited/0419-opportunity-occupations-revisited-report.pdf>

<sup>viii</sup> Lamback, S., Gerwin, C, Restuccia, D. (June 2018). "When Is a Job Just a Job – and When Can It Launch a Career?". JFF. Retrieved 03 June 2021 from [https://www.burning-glass.com/wp-content/uploads/BurningGlass\\_JFF\\_RealCareerLaddersReport.pdf](https://www.burning-glass.com/wp-content/uploads/BurningGlass_JFF_RealCareerLaddersReport.pdf)

<sup>ix</sup> The Federal Reserve Banks of Philadelphia and Cleveland classified 22% of employment in 121 metro areas in the United States as "opportunity employment" (the equivalent of "middle-skill").

Fee, K., Wardrip, K., Nelson, L. (April 2019). "Opportunity Occupations Revisited". The Federal Reserve Banks of Philadelphia and Cleveland. Retrieved 03 June 2021 from <https://www.philadelphiafed.org/-/media/frbp/assets/community-development/reports/opportunity-occupations-revisited/0419-opportunity-occupations-revisited-report.pdf>

The National Skills Coalition (NSC) classifies 52% of national employment as "skills training" (the equivalent of "middle-skills"). The methodology that NSC uses is available by request, but is not published on their website. For information on "skills training" employment for the nation and individual states, please visit <https://www.nationalskillscoalition.org/skills-mismatch/>

<sup>x</sup> For more information on BLS education, experience, and training definitions, please visit <https://www.bls.gov/emp/documentation/nem-definitions.htm#education>

<sup>xi</sup> For more information on O\*NET Job Zones, please visit <https://www.onetonline.org/help/online/zones#zone1>

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